

ALABAMA PUBLIC SERVICE COMMISSION

COUNTY OF Montgomery
STATE OF VA

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for the State and County aforesaid, personally came and appeared Randall S. Billingsley, who being by me first duly sworn depose and said that he/she is appearing as a witness on behalf of BellSouth Telecommunications, Inc. before the Alabama Public Service Commission in Docket No. 29054, IN RE: Implementation of the Federal Communications Commission's Triennial Review Order (Phase II - Local Switching for Mass Market Customers), and if present before the Commission and duly sworn, his/her statements would be set forth in the annexed direct testimony consisting of 31 pages and 6 exhibits.

Randall S. Billingsley
Randall S. BILLINGSLEY

SWORN TO AND SUBSCRIBED BEFORE ME
THIS 16th DAY OF JANUARY, 2004

[Signature] Notary Public

My Commission Expires 8/31/05

1 **BELLSOUTH TELECOMMUNICATIONS, INC.**

2 **BEFORE THE**

3 **ALABAMA PUBLIC SERVICE COMMISSION**

4 **DOCKET NO. 29054 (PHASE II)**

5 **DIRECT TESTIMONY OF**

6 **DR. RANDALL S. BILLINGSLEY, CFA**

7 **JANUARY 20, 2004**

8 **I. INTRODUCTION**

9
10 **Q. Please state your name, occupation, and business address.**

11 A. My name is Randall S. Billingsley. I am a finance professor at Virginia Polytechnic Institute and
12 State University. I also act as a financial consultant in the areas of cost of capital analysis, financial
13 security analysis, and valuation. More details on my qualifications may be found in Billingsley
14 Exhibit No. RSB-1. My business address is: Department of Finance, Pamplin College of
15 Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0221.

16
17 This testimony presents my independent professional opinions and is not presented by me as a
18 representative of Virginia Polytechnic Institute and State University.

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II. PURPOSE OF DIRECT TESTIMONY AND SUMMARY OF CONCLUSIONS

A. PURPOSE OF TESTIMONY

Q. What issues in this proceeding are you addressing?

A. My testimony furnishes a part of the information necessary to do the economic analysis to determine whether there are economic barriers to Competitive Local Exchange Carrier (“CLEC”) entry into particular geographic markets without access to unbundled local switching.

Q. Would you elaborate on the purpose of your direct testimony in this proceeding?

A. Yes. My purpose is to provide the Alabama Public Service Commission (“Commission”) with an estimate of the forward-looking costs of capital for the representative CLEC modeled in the BellSouth Analysis of CLEC Entry (“BACE”) model. My testimony provides the appropriate costs of capital to be used in the BACE model, which determines whether any lack of access to BellSouth Telecommunications, Inc. (“BST”) switch unbundled network element (“UNE”) makes entry by a CLEC uneconomical. These costs of capital can be used by the Commission in its response to the Federal Communication Commission’s (FCC’s) Triennial Review Order (In Re Review of the Section 251, Unbundling Obligations of Incumbent Local Exchange Carriers, First Report and Order on Remand and Further Notice of Proposed Rulemaking, FCC 03-36, released August, 21, 2003, hereinafter “TRO”).

1 More specifically, the costs of capital presented in my testimony are for use in calculating the net
2 present value (“NPV”) of the cash flows generated by the products of the representative CLEC
3 entering the Alabama market, as measured in the BACE model. Accordingly, I provide evidence
4 concerning the representative CLEC’s forward-looking cost of equity, cost of debt, and overall
5 cost of capital. It is essential to note that the capital cost estimates I provide are all stated on a
6 before-tax basis. The after-tax cash flows produced by the BACE model must all be discounted
7 at after-tax capital costs.

8
9 **B. SUMMARY OF THE REPRESENTATIVE CLEC’S COST OF CAPITAL**
10 **ANALYSIS**
11

12 **Q. Please describe your approaches to determining the representative CLEC’s capital**
13 **costs.**

14 A. Given the data problems explained below for the CLEC industry, I essentially provide “ceiling”
15 and “floor” estimates of the industry’s capital costs. Thus, I use two surrogates to measure the
16 representative CLEC’s capital costs. As described below, I use the Standard & Poor’s
17 Composite 500 Index (S&P 500) as a lower-bound estimate of the representative CLEC’s cost
18 of capital, and I also use a sample of publicly-traded CLECs that provides an upper-bound
19 estimate of the representative CLEC’s cost of capital. I then provide a reasonable estimate of the
20 industry’s overall capital costs by averaging the results of my two approaches.

1 It is important to emphasize that estimating the capital costs of a representative CLEC is
2 challenging. The majority of firms in the CLEC industry are either privately-held or are wholly-
3 owned subsidiaries of much larger, often diversified firms. While there are some publicly-traded
4 CLECs, a number of CLECs have declared bankruptcy over the last two years and a significant
5 number of the others operate under financial distress. The CLEC firms for which data are
6 available therefore do not, by themselves, provide a reliable picture of the industry's sustainable,
7 efficient and forward-looking capital structure and optimal financing costs.

8
9 With regard to the S&P 500 surrogate, I apply the discounted cash flow ("DCF") model to the
10 firms in the S&P 500 to measure the cost of equity of average-risk firms operating in a
11 competitive environment. As discussed below, reliance on the S&P 500 is based largely on the
12 FCC's recent clarification that the index is a "... useful benchmark for the risk faced on average
13 by established companies in competitive markets" (Verizon Arbitration Order, p. 41, §90, full
14 citation below). Thus, I apply the DCF model to the S&P 500 to provide a conservative,
15 market-determined cost of equity capital estimate for the representative CLEC. This is the
16 derivation of the cost of capital that I believe should form the floor for any analysis of the cost of
17 capital for the representative CLEC.

18
19 With regard to the surrogate composed of a group of publicly-traded CLECs, I apply the capital
20 asset pricing model ("CAPM") to estimate the cost of equity capital. Because the average cost of
21 equity for this sample reflects the severe financial distress of the industry, it provides an upper-
22 bound estimate of the representative CLEC's sustainable, efficient cost of equity. I cannot use the

1 DCF method on this sample because these CLECs do not pay dividends.

2
3 The appropriate cost of debt is determined for each of my two surrogates. First, I determine the
4 cost of debt for the representative CLEC using the current yield on the average bond rating
5 category of firms in the S&P 500. Second, I estimate the cost of debt using the average bond
6 rating for firms operating in the CLEC industry. I rely on the average market value-based capital
7 structure for each of the two surrogates. Averaging the costs of equity, the costs of debt, and the
8 capital structures of the two surrogates provides a reasonable estimate of the overall pre-tax cost
9 of capital for the representative CLEC that should be used in the BACE business case model.

10
11 **Q. Would you please summarize your findings concerning the representative CLEC's**
12 **capital costs?**

13 A. Yes. Analysis of the S&P 500 produces an average cost of equity between 14.27% and 14.35%
14 using the DCF model approach, or an average of 14.31%. The CAPM approach applied to a
15 sample of publicly-traded CLECs indicates that the representative CLEC's cost of equity capital
16 is between 20.71% and 20.84%, or an average of 20.78%. The average cost of equity for the
17 two approaches is consequently 17.55%.

18
19 Analysis of the firms composing the S&P 500 indicates that the average Standard & Poor's bond
20 rating is BBB (or Baa using the *Mergent Bond Record* equivalent). This indicates a pre-tax cost
21 of debt for the representative CLEC of 6.79%. The average bond rating on a sample of publicly-

1 traded CLECs is CCC+/CCC (or Caa+/Caa using the *Mergent Bond Record* equivalent), which
2 has a current pre-tax yield of 13.04%. Thus, the average cost of debt for the two approaches is
3 9.92%.

4
5 The average market value-based capital structure of firms in the S&P 500 is 29.50% debt and
6 70.50% equity while the average for the portfolio of publicly-traded CLEC firms is 87.43% debt
7 and 12.57% equity. The average capital structure is thus 58.50% debt and 41.50% equity.
8 Combining this average capital structure with the above average costs of debt and equity
9 produces an average pre-tax overall cost of capital for the representative CLEC of 13.09%.
10 Thus, this overall cost of capital, after being adjusted to be on an after-tax basis, should be used
11 to produce the NPVs in the BACE model.

12 13 **C. ORGANIZATION OF DIRECT TESTIMONY**

14 15 **Q. How is the rest of your testimony organized?**

16 A. Section III of my testimony overviews the status of competition in the telecommunications industry
17 in the United States and describes the structure of the CLEC industry to provide insight into the
18 context in which capital costs are estimated. Section IV discusses recent FCC clarifications
19 concerning the cost of capital that are relied on in my analyses and relevant to the current
20 proceeding. Sections V-VII describe the methods that I use to estimate the representative
21 CLEC's current capital costs and present my specific findings. Finally, section VIII presents my
22 estimate of the representative CLEC's overall cost of capital and summarizes my

1 recommendations to the Commission.

2
3 **III. CURRENT STATUS OF COMPETITION IN THE LOCAL**

4 **TELECOMMUNICATIONS MARKET AND CONDITION OF THE CLEC**

5 **INDUSTRY**

6 **A. CURRENT STATUS OF COMPETITION IN THE LOCAL**

7 **TELECOMMUNICATIONS MARKET**

8
9 **Q. What are the key points in this section that are relevant to your determination of the**
10 **representative CLEC's capital costs?**

11 **A.** In this section, I cite evidence that supports the following key points:

- 12 • Local telecommunications market competition has increased significantly and the CLEC
13 industry is playing a key role in that increase.
- 14 • Incumbent local exchange companies ("ILECs") face significant and growing competition from
15 CLECs.
- 16 • Recent technological developments like softswitches are making local market entry easier and
17 more profitable for CLECs.
- 18 • The current compromised financial condition of the average CLEC does not provide reliable
19 evidence concerning the industry's sustainable, long-run optimal capital structure or associated
20 efficient capital costs, on a stand-alone basis.

1 **Q. What is the current status of competition in local telecommunications markets?**

2 A. Competition in the local telecommunications industry has increased dramatically in recent years.
3 The sources of that increased competition include a greater number of new entrants in the
4 industry, a significant increase in the number of existing competitors, a greater number of substitute
5 telecommunications products and services, more intense competition among existing firms in the
6 industry, and enhanced regulatory risk at both the state and the federal levels. Thus, both actual
7 and potential competition has increased and the risk level of the industry has consequently
8 increased.

9
10 **Q. Is there any empirical evidence indicating a significant increase in local**
11 **telecommunications market competition?**

12 A. Yes. A recent study by the FCC documents the significant and growing trend toward greater
13 competition in the local telephone exchange market by observing the following (*Local Telephone*
14 *Competition: Status as of June 30, 2003*, Industry Analysis and Technology Division, Wireline
15 Competition Bureau, Federal Communications Commission, December 2003, pp. 1 - 2):

- 16 • Competitive local exchange carriers (CLECs) reported 26.9 million (or 14.7%)
17 of the approximately 182.8 million nationwide end-user switched access lines in
18 service at the end of June 2003, compared to 24.8 million (or 13.2% of
19 nationwide lines) in December 2002. This represents a 9% growth in CLEC
20 market size during the first half of 2003.
- 21 • Since December 1999, the percentage of nationwide CLEC switched access
22 lines reported to be provisioned by reselling services has declined steadily, to

1 18% at the end of June 2003, and the percentage provisioned over UNE loops
2 has grown, to 58%.

3 Thus, the FCC documents that competitors are making enormous strides in taking local
4 telecommunications business away from the ILECs.

5
6 Similarly, Standard & Poor's (*Industry Surveys, Telecommunications: Wireline*, May 31,
7 2001, p. 19) emphasizes the risks brought by increasing competition:

8 For local telephone companies, long-distance carriers, and cable providers alike,
9 the Telecom Act's sweeping deregulation is a double-edged sword. On the one
10 hand, a company can gain new revenue sources by providing extra services and
11 entering markets that previously were out of reach. On the other hand, the added
12 competition in all segments will result in tighter profit margins for all players.

13
14 **Q. Specifically what effects does the analyst community expect these increasing**
15 **competitive risks and the growth of the CLEC industry to have on the ILECs in general**
16 **and BST in particular?**

17 A. The following recent comments by Marc Crossman of J. P. Morgan explain how increasing
18 competition is pressuring ILECs like BST ("Company Report: BellSouth," Telecommunications
19 Wireline Services Equity Research, March 15, 2002, p. 4):

20 ... The company is facing increasing facilities-based competition from cable
21 operators on the consumer side and the CLECs controlled by WorldCom ... and

1 AT&T ... on the business side. BellSouth also faces growing competition in both
2 the consumer and business customer segments from non-facilities based wholesale
3 competitors, which lease elements of BellSouth's network to provide service. We
4 estimate that BellSouth will have lost 10% of access lines to wholesale competition
5 by year-end 2002. ... Access line loss also places pressure on margins due to the
6 high proportion of fixed versus variable costs associated with providing service.

7
8 Technology substitution exacerbates share loss for wireline voice. On the consumer
9 side, wireless is replacing both primary and secondary lines at an accelerating rate,
10 while cable and DSL broadband are eliminating demand for second lines used for
11 dial-up Internet access. On the business side, DSL is replacing ISDN BRI, while
12 ISDN PRI and fiber are replacing copper-based access lines. In many instances,
13 BellSouth becomes the provider of the substitute technology and retains the
14 customer; however, the revenue generated by the replacing technology tends to be
15 lower ...

16 The point that one can draw from all of this is that the entire telecommunications industry is
17 competitive and risky, and is growing more so with the passage of time.

18 19 **B. CONDITION OF THE CLEC INDUSTRY**

20
21 **Q. Why would it not be appropriate to determine the representative CLEC's capital costs**
22 **for application in the BACE model using information solely from currently operating**

1 **CLECs?**

2 A. That would be an acceptable approach if currently operating CLECs had demonstrated an ability
3 to maintain a sustainable presence in the market and had done so over some time. Unfortunately,
4 the CLECs as a whole continue to demonstrate some degree of financial instability. While that
5 condition should improve in the future, CLEC data are not sufficient today to rely on exclusively in
6 determining the capital costs for a representative CLEC.

7
8 **Q. What is expected to happen to the CLEC industry over the next few years?**

9 A. Recent research by International Data Corporation (IDC) projects that:
10 ... the competitive local exchange carriers (CLECs) will continue to win access
11 lines from the incumbent carriers, based on flexible pricing and packaging and
12 personalized customer service. While CLEC access lines will grow at 12.2%
13 compound annual growth (CAGR) through 2007, their revenue growth will be in
14 low single digits because of falling prices for both voice and data services. (Adcock,
15 Barbara, Kaplan, Ron, and Stofega, William. "U.S. CLEC Forecast, 2002-2007,"
16 IDC, Study #29661, June 2003, p. 1).

17
18 **Q. In light of the recent number of bankruptcies and financial distress, is it fair to conclude**
19 **that the CLEC industry does not currently exhibit a sustainable long-run structure and**
20 **the implied optimal, efficient capital structure that can be relied upon by itself to**
21 **estimate capital costs for the representative CLEC?**

1 A. Yes. The following observations reinforce the above-noted cause of the industry's current
2 problems and emphasize the state of flux the industry currently operates within:

3 Much has been written in the press about the demise of the CLEC industry. True
4 the past two years have seen several stronger players shut their doors because of
5 high levels of debt. The overall economic slump has further depressed the outlook
6 for CLECs going forward. Despite these facts, New Paradigm Resources Group,
7 Inc. (NPRG) has seen evidence in 2002 that the CLEC industry is nearing its
8 bottom and should stabilize in 2003 and early 2004.

9
10 The CLEC industry continued to shrink in 2002 as several competitive providers
11 with weak business plans, excessive amount of debt, and lackluster management
12 have gone bust. At the same time, large portions of their assets have been acquired
13 by other CLECs, serving to strengthen these companies' operations. The CLECs
14 that continue to do business in late 2002 have reduced their capital spending, scaled
15 back expansion plans, and fortified their management teams, all with an eye toward
16 future growth. Indeed, despite the ongoing drought in the capital markets, 2002 has
17 seen a handful of competitive providers receive new capital investments ... (New
18 Paradigm Resources Group, Inc. *CLEC Report 2003: Competitive Last Mile*
19 *Providers*, 17th edition, volume I, chapter 2, 2003, p. 1 of 20).

20
21 **Q. Have there been any recent specific technological advances that favorably affect the**
22 **forward-looking ability of the CLEC industry to generate profits?**

1 A. Yes. Industry observers note the importance of so-called softswitches in facilitating lower cost
2 entry into the local telecommunications market and increasing the ability of CLECs to compete
3 profitably in it. They observe that one of the trends in 2002 was that:

4 ... at least 25% of the voice-focused pure-play CLECs – that is, of the CLECs in
5 this Report – had an ongoing softswitch initiative in place. The world continues to
6 move toward a packetized infrastructure.

7 This is an important trend, carrying significant implications for the future of local
8 competition. To the extent local voice can be readily deployed over softswitches
9 going forward, the expense of deploying a Class 5 switch as an entry barrier will be
10 diminished. This suggest that many more CLEC resellers and ISPs will ultimately
11 migrate to facilities-based CLEC status, deploying voice as an application. (New
12 Paradigm Resources Group, Inc., *CLEC Report 2002: Competitive Last Mile*
13 *Providers*, 15th edition, volume I, 2002, chapter 2, p. 3 of 22.)

14 All of this suggests that while there is useful information in relying in part on information about
15 publicly-traded CLECs, such information cannot reliably reflect, by itself, the capital costs of a
16 representative CLEC.

18 **IV. RECENT FCC CLARIFICATIONS CONCERNING COST OF CAPITAL**

19 **ESTIMATION**

20 **A. TRIENNIAL REVIEW ORDER CLARIFICATIONS**

1 **Q. What are the key points in this section that are relevant to your determination of the**
2 **representative CLEC's capital costs?**

3 A. The recent clarifications made by the FCC in the TRO support the following key points that
4 influence my approaches to estimating the representative CLEC's capital costs:

- 5 • The cost of capital should rely on data that reflect competitive markets.
- 6 • The cost of capital should reflect the assumption of a forward-looking, technologically efficient
7 network. This implies that the cost of capital should reflect forward-looking, efficient capital
8 structure, equity costs, and debt costs.
- 9 • The appropriate capital structure in cost of capital analysis is market value- rather than book
10 value-based.
- 11 • The S&P 500 is a useful benchmark for assessing the average risk of firms operating in
12 competitive markets, which is relevant in the telecommunications market.

13
14 **Q. What clarifications does the FCC's TRO provide concerning the appropriate method for**
15 **computing capital costs?**

16 A. The TRO clearly indicates that the cost of capital should reflect the risks of a competitive rather
17 than a regulated market. Indeed, the FCC states:

18 To ensure that UNE prices set by the states appropriately reflect the risks
19 associated with new facilities and new services, we think it would be helpful to
20 clarify two types of risks that should be reflected in the cost of capital. First, we
21 clarify that a TELRIC-based cost of capital should reflect the risks of a competitive
22 market. The objective of TELRIC is to establish a price that replicates the price that

1 would exist in a market in which there is facilities-based competition. In this type of
2 competitive market, all facilities-based carriers would face the risk of losing
3 customers to other facilities-based carriers, and that risk should be reflected in
4 TELRIC prices. (TRO, p. 419, §680).

5 This shows that the FCC believes that the cost of capital should be measured using data from
6 competitive rather than just regulated markets.

7
8 **Q. What assumptions does the FCC make concerning the underlying telecommunications**
9 **network for the purpose of computing the cost of equity capital?**

10 A. As noted below, the FCC advocates calculating the cost of capital under the assumption of a
11 forward-looking network using the most efficient technology:

12 ... To calculate rates based on an assumption of a forward-looking network that
13 uses the most efficient technology (i.e., the network that would be deployed in a
14 competitive market), without also compensating for the risks associated with
15 investment in such a network, would reduce artificially the value of the incumbent
16 LEC network and send improper pricing signals to competitors. Establishing UNE
17 prices based on an unreasonably low cost of capital would discourage competitive
18 LECs from investing in their own facilities and thus slow the development of
19 facilities-based competition. (TRO, pp. 419-420, §682.)

20
21 The FCC's assertion that the cost of capital should reflect a forward-looking efficient network

1 presumably implies that the cost of capital should also reflect the assumption of an optimal,
2 sustainable capital structure and its associated forward-looking capital costs. Unfortunately, the
3 current financial problems being experienced by the CLEC industry undermine the validity of such
4 an assumption. It is consequently necessary to find market-based evidence of optimal, sustainable
5 capital structures and capital costs elsewhere.

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9 **B. FCC CLARIFICATIONS PROVIDED BY THE VERIZON ARBITRATION**
10 **ORDER**
11

12 **Q. Does the FCC take a position in its recent Verizon arbitration order concerning the**
13 **appropriateness of market value - rather than book value-based capital structures in cost**
14 **of capital analysis?**

15 **A.** Yes. In reviewing the cost of capital determination process applied to Verizon, the FCC
16 (specifically, the Wireline Competition Bureau) observes that:

17 ... In calculating TELRIC prices, the theoretically correct capital structure is based
18 on market values of debt and equity, not book values. In section 252(d)(1) of the
19 Act, Congress specifically prohibited the use of traditional rate-base, rate-of-return
20 ratemaking. The Commission has interpreted this section to require prices based on
21 forward-looking costs, because forward-looking costs best replicate the costs a
22 carrier would face in a market with facilities-based competition. Under the

Commission's TELRIC rules, we calculate the investment necessary to build a network using the most efficient technology currently available. The TELRIC rules provide for the recovery of the investment in that efficient network through the use of economic depreciation and they provide for a return on that investment through a risk-adjusted cost of capital. The book value of Verizon's existing network is irrelevant for these purposes. Investors would not earn the return that they require if a cost of capital that is based on book value is applied to the economic value of their assets, given that rational investors value these assets at market value. Thus, the use of a capital structure based on market values, rather than book values, represents a departure from traditional ratemaking, but one that is entirely appropriate under the Act. (In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration, CC Docket No. 00-218, and In the Matter of Petition of AT&T Communications of Virginia Inc., Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia Corporation Commission Regarding Interconnection Disputes With Verizon Virginia Inc., CC Docket No. 00-251, Memorandum Opinion and Order, DA 03-2738, released August 29, 2003, p. 45, §102, hereinafter Verizon Arbitration Order.)

1 Thus, the FCC quite clearly supports the use of market value-based capital structures in cost of
2 capital estimation.

3
4 **Q. Has the FCC provided any guidance concerning the usefulness of the S&P 500 in**
5 **measuring equity capital costs?**

6 A. Yes. In the Verizon Arbitration Order, the FCC observes that:

7 ... the overall beta of 1.0 for the S&P 500 companies for which Verizon placed
8 betas into the record does produce a useful benchmark for the risk faced on
9 average by established companies in competitive markets. (Verizon Arbitration
10 Order, p. 41, §90.)

11 The FCC consequently indicates that the S&P 500 market return is a reasonable proxy for the
12 average risk faced by firms operating in competitive markets.

13
14 **Q. By using the firms of the S&P 500 as a surrogate for the representative CLEC, does this**
15 **mean that the average CLEC has the same risk as any firm in the S&P 500?**

16 A. No. It may be tempting to single out one company in the S&P 500 and incorrectly attempt to
17 compare its various risk measures individually to those of the representative CLEC. None of the
18 individual companies in the S&P 500 are, however, precisely like the representative CLEC in
19 every respect. The firms are alternative investment opportunities that, *in the aggregate*, have
20 average risk. This benchmark consequently provides insight into the representative CLEC's long-
21 term, sustainable capital costs in a fully competitive market.

1 Some may also incorrectly argue that the S&P 500 is of low risk. Yet, this is incorrect because
2 the index is, by definition, composed of firms that are, *as a group*, of average risk. The
3 assumption that the S&P 500 captures only lower risk firms is likely based on a historical, rather
4 than a forward-looking perspective. On a forward-looking basis, there is plenty of risk associated
5 with S&P 500 companies. For example, Eastman Kodak is an S&P 500 firm, yet it recently lost
6 a significant amount of its value as investors considered a future in which digital photography has in
7 large part replaced traditional chemical-based photography. Thus, Eastman Kodak - and other
8 S&P 500 firms - face considerable forward-looking risks from technological and market changes.
9 In other words, a history of past market success is no guarantee of such a future.

10 11 **V. COST OF EQUITY ANALYSIS FOR THE S&P 500 SURROGATE**

12
13 **Q. What method do you use to calculate the cost of equity for the S&P 500?**

14 **A.** I use a standard DCF model.

15
16 **Q. What form of the DCF model do you use to estimate the representative CLEC's cost of**
17 **equity capital?**

18 **A.** I use the constant growth form of the DCF model that assumes an indefinite or infinite holding
19 period. I will first describe the general model that is commonly applied to individual firms and then
20 I will describe how the model is refined for application to the S&P 500.

1 Since most U.S. firms pay dividends quarterly, I use the quarterly form of the DCF model under
2 the realistic assumption that such dividends are changed by firms once a year, on average in the
3 middle of the year. Specifically, the cost of equity K is calculated as:

$$K = [(D_0^q (1 + G)) / P_{mkt}] + G = [D_1^q / P_{mkt}] + G;$$

4
5
6
7 where G is the most recent average five-year earnings per share growth rate projected by
8 analysts, as reported by either Zacks Investment Research Inc. (Zacks) or by the IBES, and P_{mkt}
9 is the average of the three most recent months (July to September of 2003) of high and low
10 prices for the equity. D_0^q and D_1^q reflect the most recent annual and the anticipated next year
11 amount of quarterly dividends, respectively. D_1^q is calculated as:

$$D_1^q = d_1 (1 + K)^{.75} + d_2 (1 + K)^{.5} + d_3 (1 + K)^{.25} + d_4 ;$$

12
13
14
15 where d_1 and d_2 are the quarterly dividends paid prior to the assumed yearly change in dividends
16 and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a
17 firm. Thus, dividend D_1^q captures the quarterly payment of dividends that grow at rate G. In order
18 to reflect the effect of flotation costs on the cost of equity, I directly reduce the market price P_{mkt}
19 used in my analysis by a conservative 5 percent. Billingsley Exhibit No. RSB-2 elaborates on the
20 nature and applicability of the DCF model in estimating the cost of capital. It also discusses the
21 importance of adjusting for both the payment of quarterly dividends and for flotation costs.

1 The DCF model for the S&P 500 is estimated using essentially the same approach described
2 above. The expected growth rate used in the quarterly version of DCF model, however, is the
3 market value-weighted mean of the five-year earnings per share estimates published by Zacks and
4 IBES for the firms in the S&P 500. Similarly, the average closing values of the index for the three
5 most recent months (July to September of 2003) are used. Dividend yield data are obtained from
6 Standard & Poor's *The Outlook*, restated on a quarterly basis.

7 **Q. What cost of equity capital do you estimate for the representative CLEC applying the**
8 **DCF model to S&P 500 surrogate?**

9 A. Application of the DCF model to the S&P 500 index produces a cost of equity of 14.27% using
10 IBES growth rate estimates and a cost of equity of 14.35% using Zacks growth rate estimates, or
11 an average of 14.31%.

12
13 **VI. COST OF EQUITY ANALYSIS USING THE PUBLICLY-TRADED CLEC**
14 **SURROGATE**

15
16 **Q. For your other surrogate, the limited group of publicly-traded CLECs, did you use the**
17 **DCF model to estimate that surrogate's cost of equity?**

18 A. No, I did not. Because the CLECs do not generally pay dividends, it is not possible to use the
19 DCF approach. As a result, I have instead used the CAPM approach to estimate the cost of
20 equity for this surrogate.

1 **Q. What form of the CAPM do you use to estimate the representative CLEC's cost of**
2 **equity capital?**

3 A. I use the common form of the model, which calculates the risk-adjusted rate of return K as:

$$K = R_f + \beta [R_m - R_f];$$

7 where R_f is the expected return on a risk-free security like a U.S. Treasury bond, β is the
8 expected beta or systematic risk of the equity security, and R_m is the expected return on a broad
9 index of equity market performance, which is the S&P 500 in my analysis.

11 **Q. How and where do you obtain the beta coefficient data needed to estimate the**
12 **representative CLEC's cost of equity capital using the CAPM?**

13 A. As discussed above, there is limited reliable market data with which to estimate the representative
14 CLEC's beta coefficient, which is required by the CAPM. There is, however, sufficient
15 information to evaluate a sample of CLEC firms that do have traded equity and therefore
16 measurable beta coefficients. This sample is identified in Billingsley Exhibit No. RSB-3.
17 Specifically, the average beta of 1.66 for the group of firms is used in the CAPM equation
18 presented above.

20 The beta coefficients used in my CAPM analysis are the most recent prospective measures
21 supplied by BARRA, a widely recognized provider of financial data and decision support systems
22 for institutional investors. Billingsley Exhibit No. RSB-4 elaborates on the nature and significance

1 of using prospective rather than historical beta estimates.

2
3 **Q. How do you estimate the risk-free rate of return needed in the CAPM equation?**

4 A. In order to be consistent with the expectational emphasis of the CAPM, I use the 4.51% average
5 expected yield implied by the prices of the Treasury note futures contracts quoted during
6 September of 2003. The prices of these contracts reflect the market's consensus forecast of long-
7 term, low-risk interest rates. Billingsley Exhibit No. RSB-5 describes the futures contracts used in
8 the analysis in more detail and shows the calculations necessary to derive the implied expected
9 future risk-free rate of return.

10 **Q. How do you estimate the expected return on a broad index of equity market**
11 **performance for use in the CAPM?**

12 A. I use expectational data to estimate the return of the S&P 500 as my proxy for overall equity
13 market performance using the DCF method discussed above. The expected return during the
14 most recent month (September of 2003) for which data are available is used in the CAPM
15 analysis.

16
17 **Q. What cost of equity capital do you estimate for the representative CLEC under the**
18 **CAPM approach?**

19 A. Summarizing the results of the above analysis, I use a risk-free rate of return of 4.51%, an average
20 beta of 1.66 for firms comparable in risk to the representative CLEC, and IBES and Zacks
21 growth rate estimates that imply an expected return on the S&P 500 of 14.27% and 14.35%,

1 respectively. These objective, market-determined data indicate that the representative CLEC's
2 cost of equity capital is 20.71% using the IBES growth rate and 20.84% using the Zacks growth
3 rate forecast. Thus, the average cost of equity for the representative CLEC using the CAPM
4 approach is 20.78%.

5
6 **Q. What is your conclusion regarding the representative CLEC's cost of equity capital on
7 the basis of the DCF- and CAPM-based findings for your two surrogates?**

8 A. I believe that the DCF finding of 14.31% for the S&P 500 surrogate and the CAPM result of
9 20.78% for the publicly-traded CLEC surrogate should be averaged to provide a reasonable cost
10 of equity capital estimate for the representative CLEC. The average cost of equity capital is
11 17.55%.

12 **VII. COST OF DEBT**

13

14 **Q. How can the representative CLEC's forward-looking cost of debt be empirically
15 estimated?**

16 A. Two approaches are used to estimate the cost of debt. First, the representative CLEC's forward-
17 looking cost of debt is estimated by examining the yields on bonds with the same rating as the
18 average issued by firms in the S&P 500. Using a numerical dummy coding of bond rating
19 categories, the average corporate bond rating for members of the S&P 500 is BBB or Baa. As of
20 September of 2003, the average yield on such bonds is 6.79% (*Mergent Bond Record*, October
21 2003, p. 63). Second, the representative CLEC's cost of debt is estimated by examining the
22 average bond rating of firms in the industry. As noted above and portrayed in Billingsley Exhibit

RSB-6, the average bond rating is CCC+/CCC. That exhibit also shows that the average yield on such bonds in September of 2003 is 13.04%. While this is the rating and associated average yield of a financially troubled industry, I use it to estimate a ceiling debt cost for the industry.

Q. What is your estimate of the representative CLEC's forward-looking cost of debt?

A. Based on my analysis, I believe that a reasonable estimate of the representative CLEC's forward-looking cost of debt is the average of the two estimates of 6.79% and 13.04%, which are the estimates provided by the S&P 500 firms' debt and the sample of publicly-traded CLEC debt. The average cost of debt for the two approaches is 9.92%.

VIII. OVERALL COST OF CAPITAL FOR THE REPRESENTATIVE CLEC AND SUMMARY OF RECOMMENDATIONS

Q. What capital structure, component costs of capital, and overall cost of capital do you use in estimating the representative CLEC's overall cost of capital directly?

A. I use my estimated costs of equity and debt for the representative CLEC along with the average market value-based capital structure for both the S&P 500 and the above-noted sample of publicly-traded CLECs. The average market value-based capital structure of firms in the S&P 500 is 29.50% debt and 70.50% equity while the average for the sample of publicly-traded CLECs is 87.43% debt and 12.57% equity (see Billingsley Exhibit No. RSB-3). Averaging these capital structure weights and combining them with the above average cost of debt and cost of

equity estimates produces a pre-tax overall cost of capital for the representative CLEC of 13.09%.

Q. What practical and theoretical arguments support reliance on market value-based rather than on book value capital structures in cost of capital analysis?

A. Book value capital structures do not recognize the reality the representative CLEC obtaining capital in today's financial marketplace. The use of market values is both practically as well and theoretically appropriate and consistent with establishing a prospective cost of capital for use in a proceeding such as this one. Market values should be used exclusively because they are dynamically determined in the marketplace by investors, while book values are the result of historical accounting practices. One-time accounting events that do not change market values can significantly alter book values. Additionally, the point in time at which a company issued stock in the past can influence book values, while prospective market values are not affected. Current market values are determined by investors' most up-to-date expectations for the future. These expectations are based on a variety of factors, many of which are external to a CLEC. Book values look at a firm largely in dated isolation, while market values consider the firm's expected performance in light of its external competitive environment as well.

Over time, market values vary from book values as investors change stock prices in response to new company announcements as well as to announcements concerning their competitors for investors' dollars. If an event or announcement significantly enhances or detracts from shareholder value, that change is immediately translated into a market value change by investors, while there is

likely to be no immediate change in book value. It is obvious that relying on book values is unrepresentative of the investor's perspective in today's capital markets from which the representative CLEC must obtain capital. The impact of relying on book values is a downward bias in overall cost of capital estimates.

Q. Would you elaborate on how market value-based capital structures reflect investors' expectations and how capital structures are commonly measured in accepted financial practice and theory?

A. Yes. Market value-based capital structures reflect the most up-to-date expectations of investors in the capital markets. In contrast, book value-based capital structures reflect accounting conventions and historical costs. It is important to stress that capital costs inherently involve market-based expectations no matter what type of cost estimation model is used. Therefore, the capital structure that is matched with expected capital costs must also be measured in market value terms that capture investors' expectations. In order to be consistent with well-established financial practice and theory, market-determined capital costs must be matched with market-determined capital structures. Indeed, the use of market value-based capital structures in cost of capital and capital budgeting analysis is the standard approach taken in modern corporate finance textbooks (e.g., see S. A. Ross, R. W. Westerfield, and B. D. Jordan, *Essentials of Corporate Finance*, Irwin: 1996, pp. 316-317 or R.A. Brealey and S.C. Myers, *Principles of Corporate Finance*, McGraw-Hill: 1996, 5th ed., pp. 214, 517).

1 Many people mistakenly believe that there are three different costs of capital: historical, current,
2 and expected. Actually there is only one relevant measure, which is the *expected* cost of capital
3 that is based on market values. This is consistently updated every day in the financial markets and
4 exists at any given point in time. Thus, market value-based capital structures are more appropriate
5 than accounting-based capital structures in cost of capital analysis

6
7 **Q. Is the use of market value-based capital structures in cost of capital analysis consistent**
8 **with well-accepted legal and regulatory standards?**

9 A. Yes. In addition to being consistent with well-established financial practice and theory, I believe
10 that the use of market value-based capital structures is consistent with the universally-accepted
11 Supreme Court precedents concerning what characterizes a reasonable rate of return for a
12 regulated public utility (see Bluefield Water Works & Improvement Co. v. Public Service
13 Commission of West Virginia, 262, U.S. 679, 692-3, (1923) and Federal Power Commission v.
14 Hope Natural Gas Co. 320, U.S. 591, (1944)).

15
16 Market value-based capital structures are also consistent with the FCC's standard of considering
17 the expected cost of capital (see First Report & Order, FCC 96-325, released August 8, 1996,
18 paragraph 700). Because the expected cost of capital is, by definition, based on investors'
19 expectations, all of its components must be based on expectations. The FCC's standard implies
20 that the CLECs' costs of debt, costs of equity, and capital structures must all rely on the
21 expectations reflected in market values. Thus, well-accepted financial practice and theory as well
22 as the FCC's espoused principle indicate that market value-based capital structures are more

1 appropriate than accounting-based capital structures in cost of capital analysis.

2
3 **Q. Similarly, is the use of market value-based capital structures in cost of capital analysis**
4 **consistent with the recent clarifications concerning the estimation of capital costs that**
5 **you discuss above in your testimony?**

6 A. Yes. As discussed above in Section IV of my testimony, the FCC clearly states that “... the use
7 of a capital structure based on market values, rather than book values, represents a departure
8 from traditional ratemaking, but one that is entirely appropriate under the Act” (Verizon
9 Arbitration Order, p. 45, §102).

10
11 **Q. Would you please elaborate on why it is necessary to adjust your overall cost of capital**
12 **estimate for taxes before using it to discount the representative CLEC’s cash flows in**
13 **the BACE model?**

14 A. Yes. The representative CLEC operates in a competitive marketplace that is fully subject to state
15 and federal taxation. Thus, it is important to adjust all estimated capital costs for the effects of
16 such taxation. Interest expenses are typically deducted from taxable income. Thus, each dollar of
17 interest paid reduces the amount of a CLEC’s income that is subject to tax. For example, if a
18 CLEC pays a before-tax interest cost of 6.79% and faces a 32% tax rate, it’s effective after-tax
19 cost of debt will be $6.79\% (1 - 32\%) = 4.62\%$. In contrast, a CLEC must meet equity holders’
20 return requirements as an expense that is not tax-deductible. Thus, for example, the before-tax
21 cost of equity on the S&P 500 of 14.31% is equal to the after-tax cost. In other words, the cost

1 of equity receives no favorable tax treatment.

2
3 In evaluating potential investments, it is necessary to discount after-tax cash flows at after-tax
4 capital costs. The BACE model generates after-tax cash flows that consequently must be
5 discounted at an after-tax overall cost of capital in order to produce a reliable NPV estimate.

6
7 **Q. Would you please summarize your recommendations to the Commission concerning the**
8 **appropriate capital costs that should be used in the BACE business case model to assess**
9 **whether any lack of access to BST's switch UNE makes entry by a CLEC**
10 **uneconomical?**

11 A. My analysis indicates that a forward-looking cost of equity estimate for the representative CLEC
12 using the DCF and CAPM approaches is an average of 17.55%. I also find evidence that the cost
13 of debt of the representative CLEC is an average of 9.92%. The average market value-based
14 capital structure of firms is 58.50% debt and 41.50% equity. Combining this average capital
15 structure with the above average costs of debt and equity produces an average pre-tax overall
16 cost of capital for the representative CLEC of 13.09%.

17
18 In summary, I recommend that the Commission use a *before-tax* overall cost of capital of
19 13.09% to discount the cash flows produced by the BACE CLEC business case model. As
20 noted above, the capital cost estimates I provide are all stated on a before-tax basis. The after-tax
21 cash flows produced by the BACE model must be discounted at after-tax capital costs so as to
22 produce a reliable NPV estimate.

1

2 **Q. Does this conclude your direct testimony?**

3 A. Yes, it does.

4

5